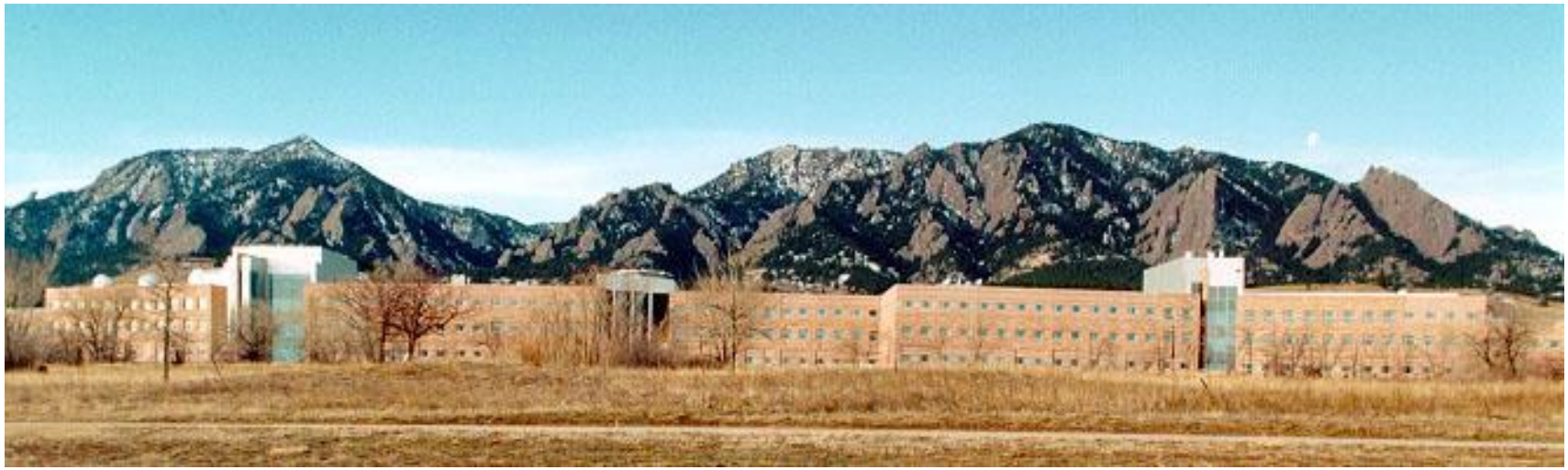


STP Quarterly Review

08 Apr 2011

2QFY11

Dr. William F. Denig, Chief
Solar & Terrestrial Physics Division
NOAA/NESDIS/NGDC
303 497-6323
William.Denig@noaa.gov

OUTLINE
Solar & Terrestrial Physics Division

- **STP Program Overview**
- **Milestones & Performance Measures**
- **Awards & Personal Achievements**
- **Accomplishments**
- **Special Interest Items**
- **Recommendations on "*The Way Ahead*"**
- **Issues & Summary**

Solar & Terrestrial Physics Division
Personnel

Solar & Terrestrial Physics Division
William Denig/F, Chief
Janet Brown/F, Secretary
Karen Horan/F, Physical Science Tech
Craig Clark/F, Scientific Data Tech

Earth Observation Group (EOG)

Chris Elvidge/F, Team Lead
- Kim Baugh/C
- Tilottama Ghosh/C
- Daniel Ziskin/C
- Sharolyn Anderson/C

Space Environment Group (SEG)

Vacant/F, Team Lead
- Terry Bullett/C
- Janet Green/F
- Ray Conkright/C
- Rob Redmon/F
- Dan Wilkinson/F
- Jim Manley/C
- Pat Purcell/C
- Paul Meade/CPI @ NGDC
- Peter Elespuru/C
- Anu Sundaravel/C
- Janet Machol/C
- John Schminky/S
- Preeti Bhaneja/C
- Dominic Fuller-Rowell/S

Earth Geophysics Group (EGG)

Vacant/F, Team Lead
- Patrick Alken/C
- Rob Prentice/C
- Fran Coloma/C
- Justin Mabie/C

Key
F – Federal
C – CIRES/CIRA
S – Student
G – Guest Scientist

STP Division Overview
Personnel Changes

- **Gains**
  - Janet Green, Transferred from SWPC
  - Janet Machol, Relocated from SWPC
- **Losses**
  - Ed Erwin, Retired after 20 years of DOC service
- **Re-Assignments**
  - Justin Mabie – Assuming responsibility for solar & geomag indices
  - Karen Horan – Filling in for Ed [*TBD*]
  - Craig Clark – Assuming responsibility for SWPC Report & Summaries
- **Vacancies**
  - GNSS Data Manager – Paperwork in progress
  - GOES Particle Physicist
- **Inbound**
  - Lisa Risso, Summer intern – Reviewing global change databases
- **Outbound**
  - *none*

STP Division Overview
External Funding – FY11

STP Funding Sources

Agency	Program	Group	Amount ($K)	Status
NOAA	Climate Database Modernization Program (CDMP) [Elvidge]	EOG	84	Planned
NPS	California Earthquake Pow er Detection Systsm (Elvidge)	EOC	198	Planned
USAF	National Air & Space Information Center (NASIC) [Elvidge]	EOG	100	Confirmed
NASA	Carbon Project [Elvidge]	EOG	25	Confirmed
World Bank	World Bank (Incrementally Billed) [Elvidge]	EOG	92	Confirmed
JAPAN	Ministry of Agriculture, Forestry and Fisheries (MAFF) [Elvidge]	EOG	22	Confirmed
KOREA	National Fisheries Research and Development Institute (NFRDI) [Elvidge]	EOG	8	Confirmed
CIA	Central Intelligence Agency [Elvidge]	EOG	100	Planned
NOAA	Comprehensive Large Array-data Stew ardship System (CLASS) [Kihn]	SEG		TBD
NOAA	NPOESS SEM-N Algorithm Development [Denig]	SEG	160	Confirmed
NOAA	NOAA Virtual Data System (NVDS) [Kihn]	SEG		TBD
NOAA	POES Satellite Processing/Re-processing [Green]	SEG	85	Received
NOAA	Climate Database Modernization Program (CDMP) [Denig]	SEG	24	Planned
NOAA	Continuously Operating Reference Stations (CORS) West Operations [Denig]	EGG	298	Planned
NOAA	Climate Database Modernization Program (CDMP) [Redmon]	SEG	36	Planned
NOAA	Climate Database Modernization Program (CDMP) [Mabie]	EGG	6	Planned
			1,238	
Status Key:			As of:	06-Apr-11
Received	Monies have been received in-house			
Confirmed	Funding agency has identified funds			
Planned	Identified funding amounts either proposed or planned			
Invoiced	Invoice sent or in process			
TBD	To Be Determined			

Note: CDMP Funding is Questionable

Does not include: Forward-funded obligations for SEM-N (~$1M)
Direct CIRES support to Terry Bullett (~$525K)

STP Division Overview
Agreements – Status

Agreements

Scope	Team	Type	Partner	NOAA Legal	DOC Legal	NGDC Signed	Partner Signed	Start	End	Status	
CORS Support	NTL	AGR	NGS	n/a	n/a			01-Oct-03	30-Sep-09	Y	*C Fox in discussions with NGS*
SWx Climatology	NTL	MOU	AFCCC	X	X	X	X	27-May-04	01-Oct-14	G	In place - *no FY11 activity*
GPS Data (CORS)	NTL	MOA	Multi	n/a	n/a	X	X	20-Sep-04	*TBD*	G	*Biannual Review - at NGS*
Outage Detection	NTL	MOU	NPS					*TBD*	*TBD*	G	*New MOU in process*
NASIC	NTL	MOU	NASIC	X	X	X	X	09-Mar-11	30-Jan-15	G	*New MOU in place*
Ionospheric Data	SWX	MOU	AFWA	X	X	X	X	21-Aug-06	21-Aug-11	G	In place - *no FY11 activity*
DMSP Archive	NTL	MOA	DMSP	X	X	X	X	30-May-07	30-Sep-09	Y	*Expired - Re-engaging*
ViRBO	SWX	MOA	NASA	X	X	X	X	15-Apr-09	n/a	G	In place - *no FY11 activity*
Ionosonde Sites	SWX	IA	USGS	X	X	X	X	03-Apr-09	03-Apr-14	G	In place - nothing to report
SEM-N - AFRL	SWX	MOA	AFRL	X	X	X	X	11-May-09	11-May-14	G	In place - nothing to report
Nighttime Lights	SWX	MOU	DOE	X	X	X	X	12-Aug-09	12-Aug-13	G	In place - nothing to report
Gas Flaring	NTL	SA	WBank	X	X	X	X	4/6/2010	31-Dec-14	G	In place - nothing to report
SEM-N Algorithms	SEG	MOU	SMC	X	X			*TBD*	*TBD*	G	*New MOU in process*

As of: 06 Apr 11

G	Good shape
Y	Watch Item
R	Action Required

STP Division Overview
CDMP – Status

STATUS

CDMP

Dataset	Funded in FY10	Proposed for FY11	POC	Contractor ($K) - FY10	Contractor ($K) - Expended YTD	NGDC - FY10 ($K)	NGDC - FY11 ($K) Proposed
DMSP Film Scanning (L3)	√	√	Elvidge	466.0	466.0	42.5	40.0
Historical Ionosonde Records (L7)	√	√	Redmon	90.0	90.0	9.0	13.8
Historical Solar Observations (L18)	√	√	Horan	55.0	55.0	3.0	6.0
Cosmic rays - Forbush archives (L42)	√	√	Denig	205.0	205.0	8.0	8.5
Heat Capacity Mapping Mission (L44)	√	√	Elvidge	50.0	50.0	5.0	4.0
NGS Multi-Lens (L50)	√	√	Elvidge	175.0	175.0	27.5	40.0
Ionosonde Paper Record Project (L55)	√	√	Redmon	40.0	40.0	4.0	8.0
Geomagnetic Variation Digitization (L56)	√	√	Mabie	60.0	60.0	6.0	15.0
							As of: 05 Apr 11

On 15 Mar 11 the CDMP Contractor was directed to "Stop-Work"

L44 (HCMM) – All tasks were completed in FY10

Indicates additional funding added

STP Division Overview
GOES Spacecraft/Instrument Status

Spacecraft	Series	Operational Status	Status	Magnet1	Magnet2	Magnetometer 1	Magnetometer 2	MAG	XRS	XRS-EUV	EXIS	EPS	HEPAD	SEISS	XRP	SXI	SUVI
GOES 8	GOES I-M	Decommisioned	R	G	G				G			G	G		G		
GOES 9	GOES I-M	Decommisioned	R	G	G				G			G	G		G		
GOES 10	GOES I-M	Decommisioned	R	G	G				G			Y	G		G		
GOES 11	GOES I-M	Operational West	G	G	G				R			G	G		R		
GOES 12	GOES I-M	South America	G	G	G				R			Y			R	R	
GOES 13	GOES N-O-P	Operational East	G			G	G			O		G	G			O	
GOES 14	GOES N-O-P	Standby	G			G	G			G		G	G			G	
GOES 15	GOES N-O-P	Standby	G			G	G			G		G	G			G	
GOES R	GOES R	Acquisition						TBD			TBD			TBD			TBD
GOES S	GOES R	Acquisition						TBD			TBD			TBD			TBD

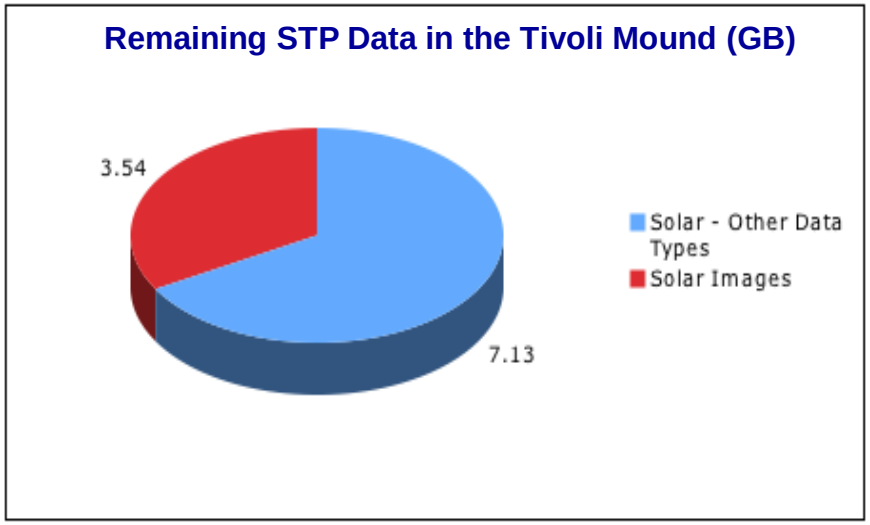
As of: 03 Apr 11

Operational (or capable of)	G
Operational with limitations (or Standby)	Y
Operational with Degraded Performance	O
Not Operational	R
Status Unknown	TBD

Note: SWPC operations use GOES-13 SEM & SXI; GOES-15 XRS-EUV & SXI currently used for SWPC operations. All available GOES and POES Space Weather data flowing into the archive[1].

[1]*Some GOES data awaiting final SWPC OK.*

STP Division Overview
Tivoli Mound



1QFY11
Total Size: 11 GB

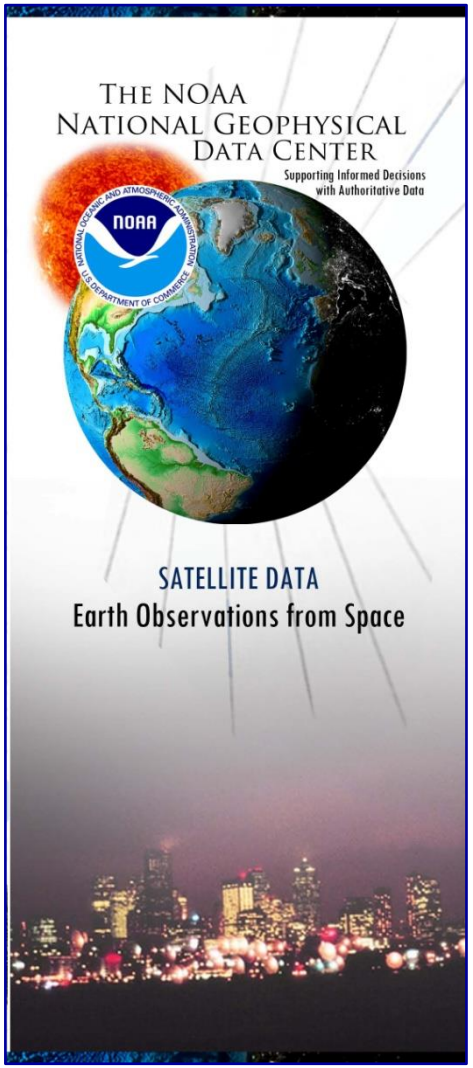
	1QFY11	2QFY11
Solar	11 GB	0 GB

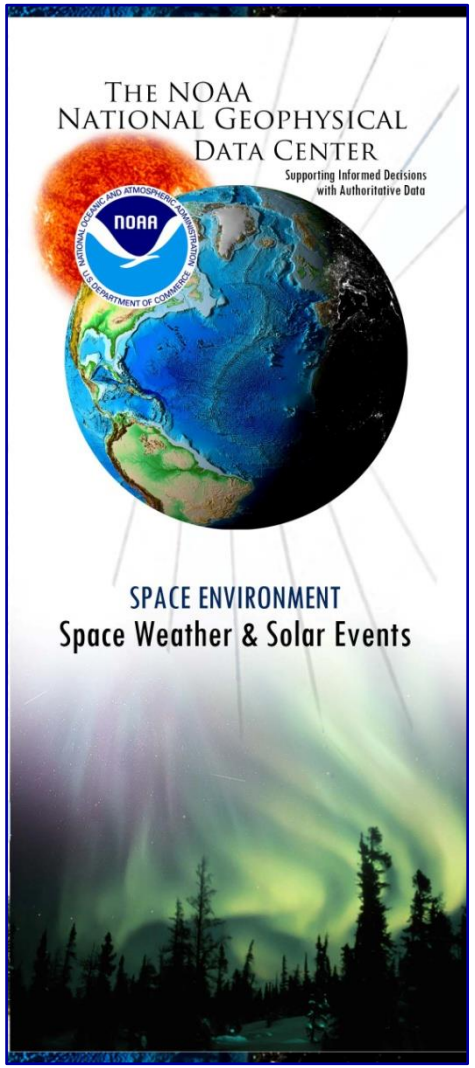
2QFY11
Total Size: 0 GB

STP Division Overview
STP Tri-folds

Thanks Siobhan

Siobhan Collins has been working with STP personnel to revise the contents and look of the division tri-folds. The results are great and we are very appreciative of the effort!





OUTLINE
Solar & Terrestrial Physics Division

STP Program Overview

Milestones & Performance Measures

Awards & Personal Achievements

Accomplishments

Special Interest Items

Recommendations on "*The Way Ahead*"

Issues & Summary

FY11 Milestones
STP

LO	Goal	Objective	Milestone			Due	Completed	POC
NOS	Resilient Coastal Communities and Economies (NOS)	Safe, Efficient and Environmentally Sound Marine Transportation	Acquire available definitive geomagnetic data from the INTERMAGNET consortium for 2009 including data from over 100 magnetic observatories	G		4QFY11 30-Sep-2011		Mabie
CS	Climate Adaptation and Mitigation (CS)	Improved Scientific Understanding of the Changing Climate System and Its Impacts	Prepare and submit a white paper to the National Research Council on the need for continuous satellite measurements to maintain the Total Solar Irradiance (TSI) Climate Data Record (CDR)	C		1QFY11 30-Dec-2010	1QFY11 12-Nov-2010	Denig
			Calculate national and global gas flaring volumes for 2010 using available imagery data from the Defense Meteorological Satellite Program (DMSP)	C		2QFY11 31-Mar-2011	2QFY11 23-Feb-2011	Elvidge
			Complete and release the year 2010 radiance calibrated nighttime lights product	G		3QFY11 30-Jun-2011		Elvidge
NWS	Weather-Ready Nation (NWS)	A More Productive and Efficient Economy Through Environmental Information Relevant to Key Sectors of the U.S. Economy	Complete the historical data rescue of solar synoptic drawings for years 1972 to 2009 prepared by the NOAA Space Weather Prediction Center and predecessor organizations.	C		1QFY11 30-Dec-2010	1QFY11 01-Nov-2010	Horan
			Deliver to the NWS Space Weather Prediction Center a transition ready version of the Ovation Prime aurora product	C	AOP	1QFY11 30-Dec-2010	1QFY11 10-Dec-2010	Redmon
			Produce a Concept of Operations for the archive, access and assessment of the GOES N-O-P Space Environment Monitor (SEM) data from the NESDIS OSDPD	Y		2QFY11 31-Mar-2011	CR/Budget Impacted	Wilkinson
			Develop and deliver a science-grade software product to compute ionospheric electric fields for the Swarm satellite constellation mission	C		2QFY11 31-Mar-2011	2QFY11 04-Mar-2011	Alken
			Develop a master plan for the NGDC solar program identifying all current organizational interfaces tied to the NMMR metadata repository	G		3QFY11 30-Jun-2011		Denig
			Release new Auroral Resources page facilitating visualization of and access to space weather datasets available through NGDC	G		3QFY11 30-Jun-2011		Redmon
			Deliver to the Defense Weather Satellite System (DWSS) Progam Office updated Algorithm Theoretical Basis Documents for the Space Environment Monitor - Next (SEM-N) sensor	G		4QFY11 30-Sep-2011		Purcell
			Digitize and make available on-line the complete set of Solar-Geophysical Data reports for 1955 to 2009 prepared by the NGDC Solar Data Services group	G	AOP	4QFY11 30-Sep-2011		Clark

As of 05 Mar 11

C Complete
G On-track
Y Watch Item
R Issue

2QFY11 Milestone
2010 Global Gas Flaring Volumes

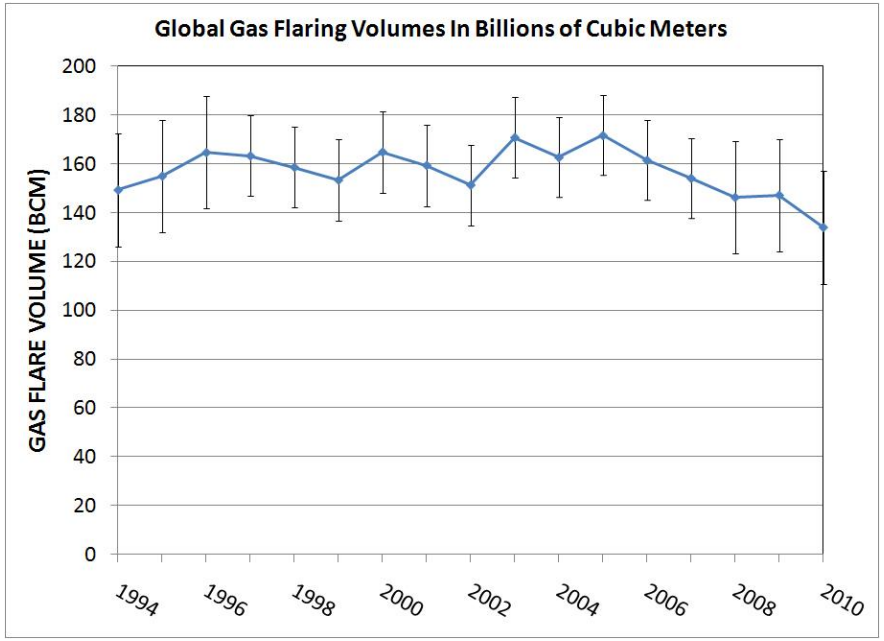
Milestone – Calculate national and global gas flaring volumes for 2010 using available imagery data from the Defense Meteorological Satellite Program (DMSP).

Background – Since 1994, the NGDC Earth Observations Group has used DMSP Nighttime Imagery as a proxy for global gas flaring. These efforts are supported by the World Bank's Global Gas Flaring Reduction initiative.

Completion Date:

Planned: (FY11-2Q) 31Mar11
Actual: (FY11-2Q) 23Feb11

Significance – Based on DMSP nighttime lights data, global gas flaring declined by almost 9% from 2009 to 2010.



2QFY11 Milestone
CONOPS for SWPC to OSDPD Realignment

Milestone – Produce a Concept of Operations for the archive, access, and assessment of the GOES N-O-P Space Environment Monitor (SEM) data from the NESDIS OSDPD.

Background – In FY10 the Space Weather Prediction Center initiated a FY11 realignment of functions with the Office of Satellite Data Processing and Distribution (OSDPD), pending the availability of funds. To date, funds have not been secured to implement this realignment. At this point it is questionable that this realignment will occur for the current GOES series.

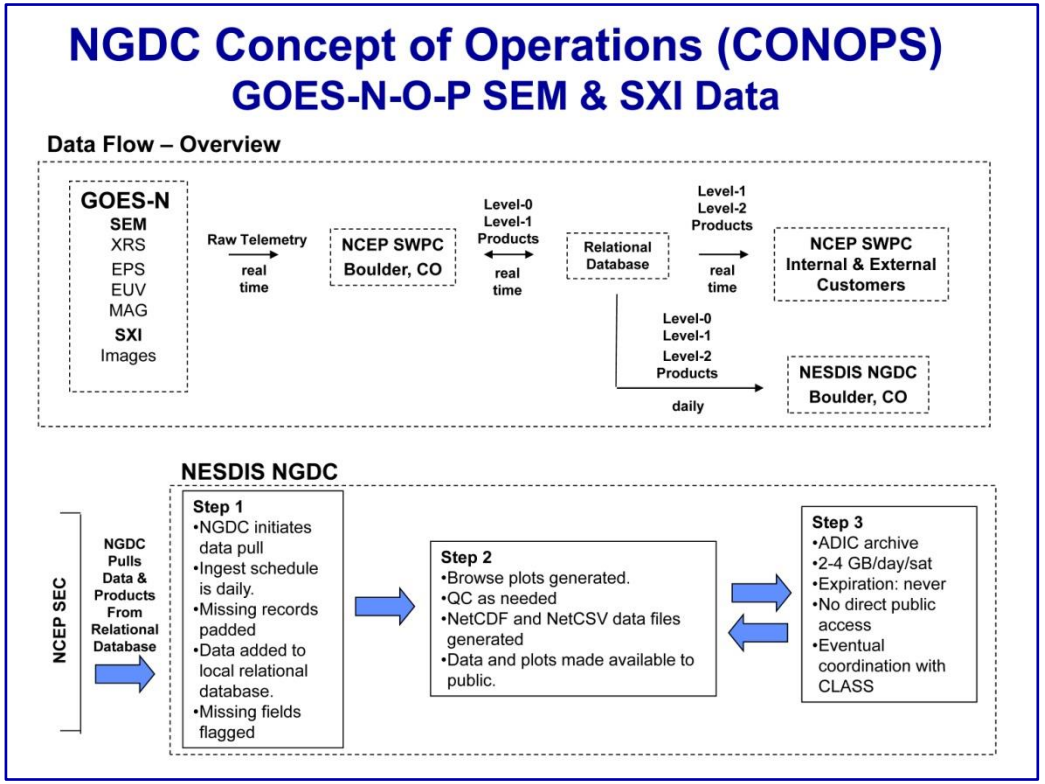
Completion Date:

Planned: (FY11-2Q) 31Mar11

Actual : Stalled

Status – Recommend that this milestone be deferred pending decisions /actions on the SWPC-OSDPD re-alignment. Chances are that this milestone will be O.B.E. unless resources are found to implement the re-alignment. In the meantime, continue to acquire processed GOES N-O-P data from SWPC and develop an in-house capability to reprocess.

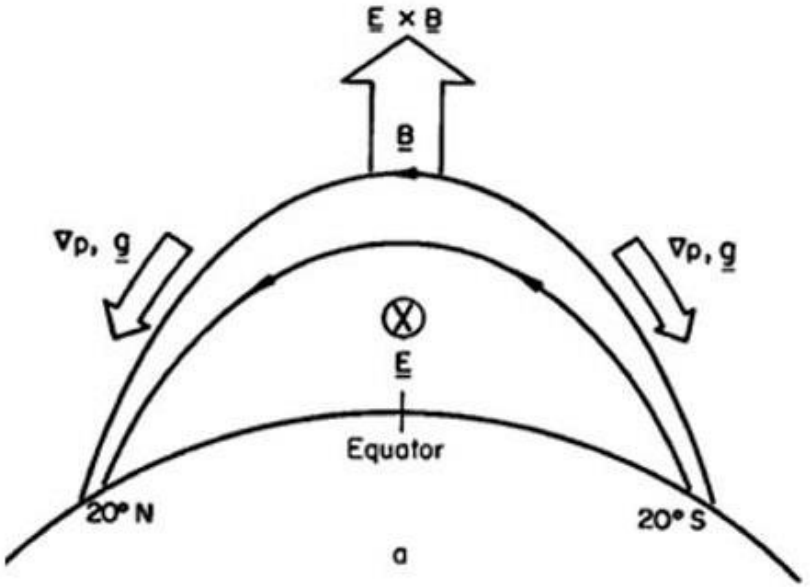
Current CONOPS (SWPC)



2QFY11 Milestone
Swarm Eastward Electric Field (EEF)

Milestone – Develop and deliver science-grade software product to compute ionospheric electric fields for the Swarm satellite constellation mission/

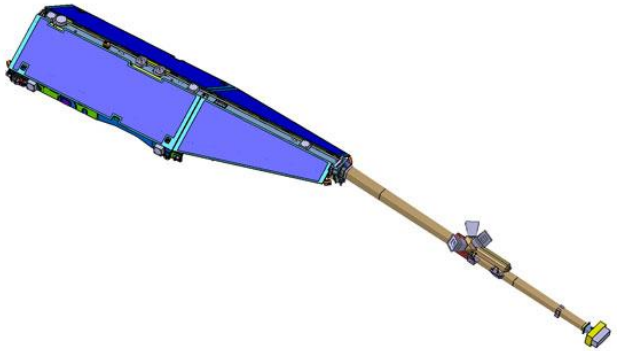
Background – The eastward equatorial electric field (EEF) is a major factor in determining the structure (i.e. Appleton anomaly) of the dayside ionosphere through the plasma fountain effect. Sensitive satellite magnetometry can measure dayside currents and be used to calculate the EEF. Pat Alken is currently in Paris overseeing algorithm developments for the European Swarm mission.



Completion Date:

Planned: (FY11-2Q) 31Mar11
Actual : (FY11-2Q) 04mar11

Significance – Algorithms currently under development support the SWARM science objective to study electric currents flowing in the magnetosphere and ionosphere.



Milestones & Performance Measures

FY11 Performance Measures

STP Annual Performance Measures

Space Weather - AOP

LO	Goal	Objective	Performance Measure	POC	1QFY11	2QFY11	3QFY11	4QFY11	Annual
NWS	Weather-Ready Nation (NWS)	A More Productive and Eficient Economy Through Environmental Information Relevant to Key Sectors of the U.S. Economy	Greater than 97% (2 sigma) of available Space Environment Monitor satellite data are archived on an annual basis	Wilkinson	100%	100%			

Nightime Lights

LO	Goal	Objective	Performance Measure	POC	1QFY11	2QFY11	3QFY11	4QFY11	Annual
CS	Climate Adaptation and Mitigation (CS)	Improved Scientific Understanding of the Changing Climate System and Its Impacts	Acquire, process and disseminate >2 sigma (97%) of available real-time nighttime lights imagery within 3 hours of receipt	Elvidge	100%	100%			

CORS

LO	Goal	Objective	Performance Measure	POC	1QFY11	2QFY11	3QFY11	4QFY11	Annual
NOS	Resilient Coastal Communities and Economics (NOS)	Resilient Coastal Communities That Can Adapt To The Impacts Of Hazards And Climate Change	Provide a >2 sigma (97%) availability for Continuously Operating Reference Station (CORS) near-real-time data to the NWS Space Weather Prediction Center as per the '4-way' Memorandum of Agreement and subject to normal business-hour response times.	Coloma	100%	100%			

As of: 31 Mar 11

- Greater than 99% (3-sigma) Cumulative Distribution
- Greater than 97% (2-sigma) Cumulative Distribution
- Greater than 84% (1-sigma) Cumulative Distribution
- Below 84.1% (1-sigma) Cumulative Distribution

Move to archive is awaiting finalization from SWPC

OUTLINE
Solar & Terrestrial Physics Division

STP Program Overview

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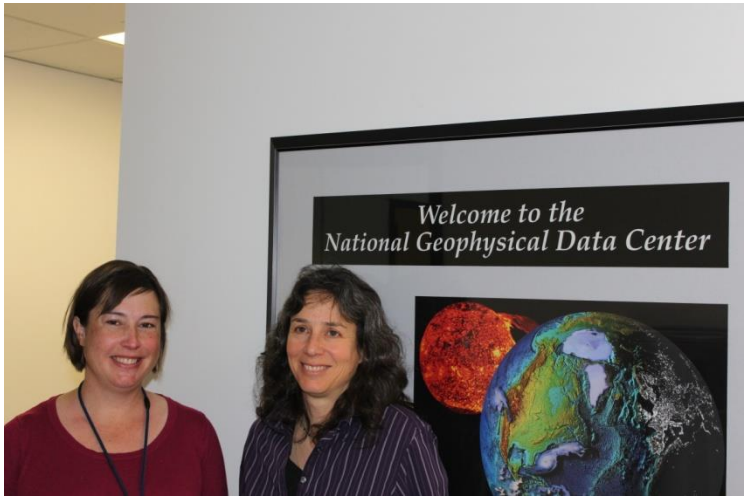
WELCOME
Hail and Farewell

Janet Green & **Janet Machol** recently transitioned from SWPC to STP to strengthen NGDC's space weather program. Areas of concentration will be to improve the quality and user effectiveness of our POES and GOES space particle datasets, grow an in-house capability to re-process these data as needed and develop climatologies/tools to effectively serve the spacecraft charging community. STP welcomes Drs. Green & Machol.

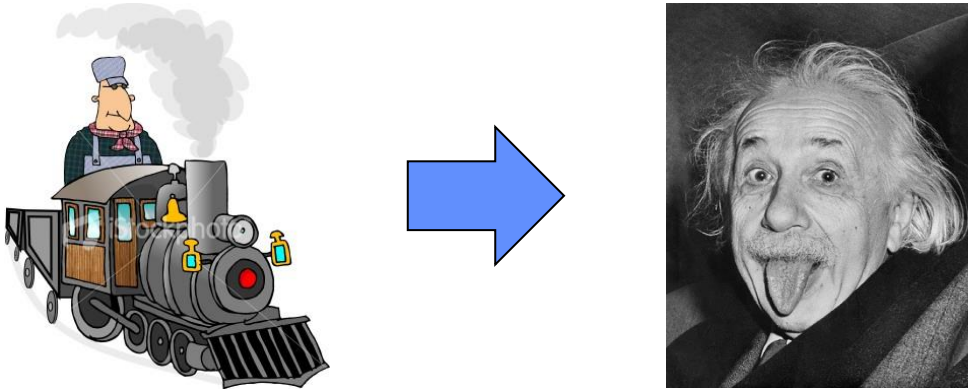


Ed Erwin has now retired after 20 years of service to NOAA. Within STP, Ed was responsible for the solar program and for managing the interface with AFWA for the DMSP data within the Nighttime Lights Program. Ed joined NGDC in 1993 after spending 2 years with the NWS. Prior to civilian government service Ed served in the USAF for almost 23 years, first as an enlisted member and then as an officer, retiring with the rank of Capt. STP acknowledges Ed's significant contributions in assuming responsibility for the solar program following Helen Coffey's retirement in 2007 and for reprocessing the entire DMSP nighttime lights dataset using new calibration factors normalized across the DMSP satellites, F10-18.

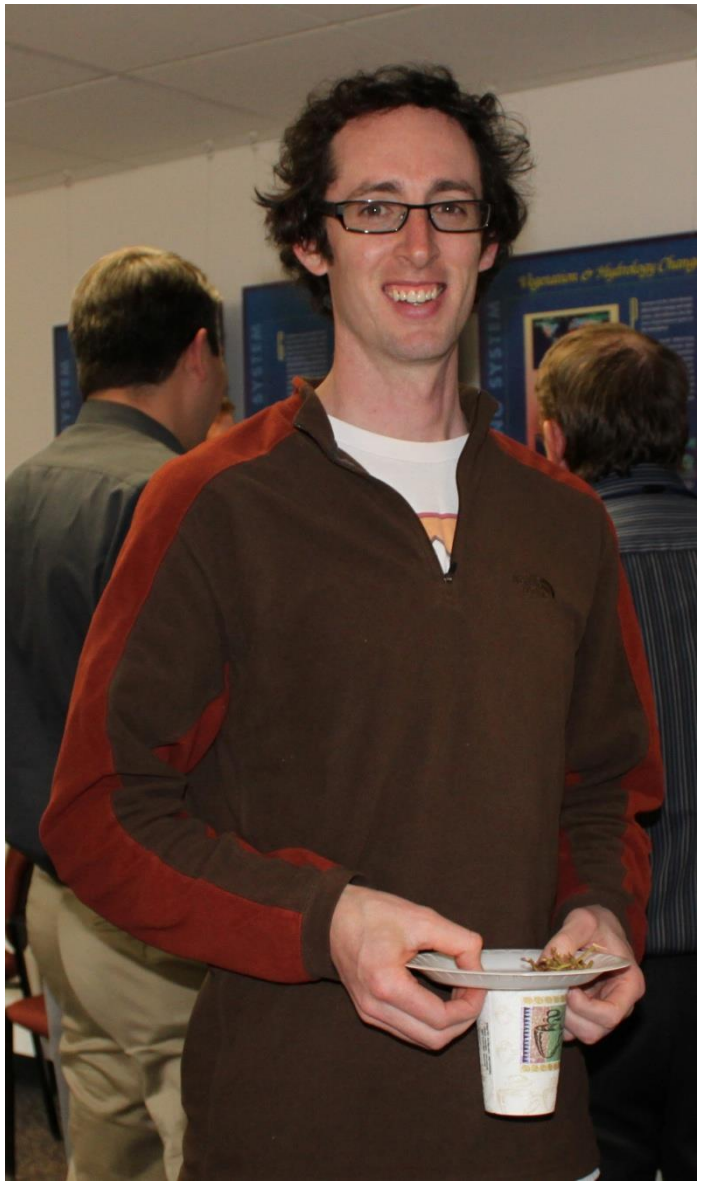
Scholastics
Rob Redmon Passes His “Comps”

Mr Rob Redmon passed his PhD comprehensive exams on 30-Mar. All that remains is for Rob to submit and successfully defend his dissertation (A.B.D.)

Rob’s thesis topic is High-Latitude Auroral Winds flowing out of the ionosphere during quiet times. His thesis committee includes Xinlin Li (academic advisor), Bill Peterson, Laila Andersson, Jeff Thayer, Delores Knipp and Cora Randall within the Laboratory for Atmospheric and Space Physics (LASP) at CU.

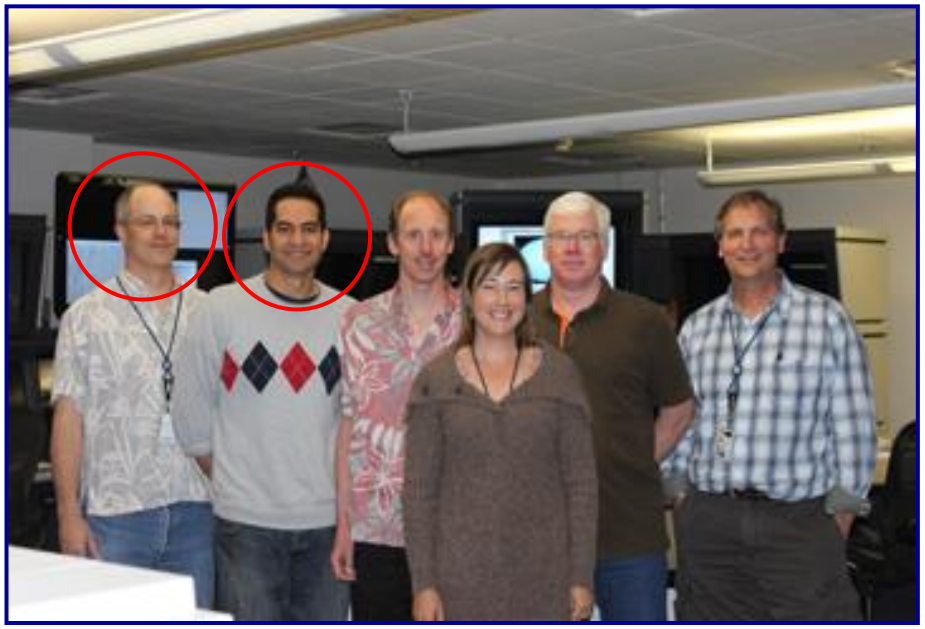


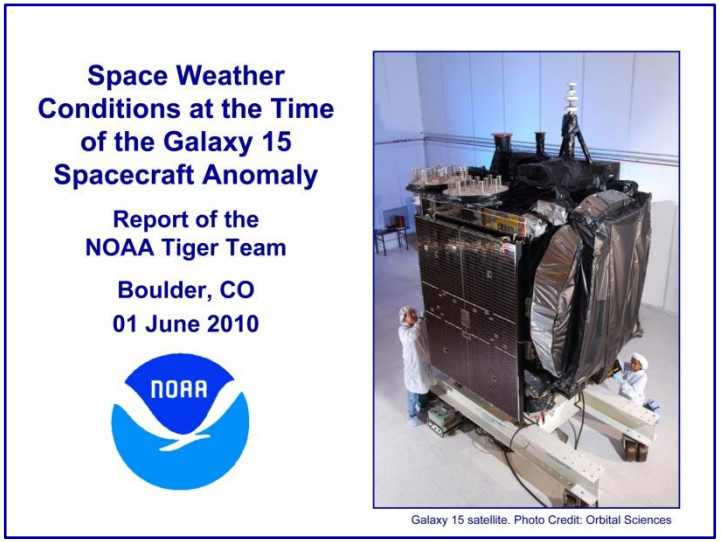
From Engineer to Physicist!



Kudos
CIRES Outstanding Performance Award

Drs. Paul Loto'aniu & Juan Rodriguez (SWPC) have been been selected for the science and engineering award in the 2011 CIRES Outstanding Performance Awards Program. This award is for substantive contributions made to the Galaxy-15 anomaly environmental assessment. The award will be presented at the CIRES Rendezvous on 22 April.





Galaxy 15 satellite. Photo Credit: Orbital Sciences

OUTLINE
Solar & Terrestrial Physics Division

STP Program Overview

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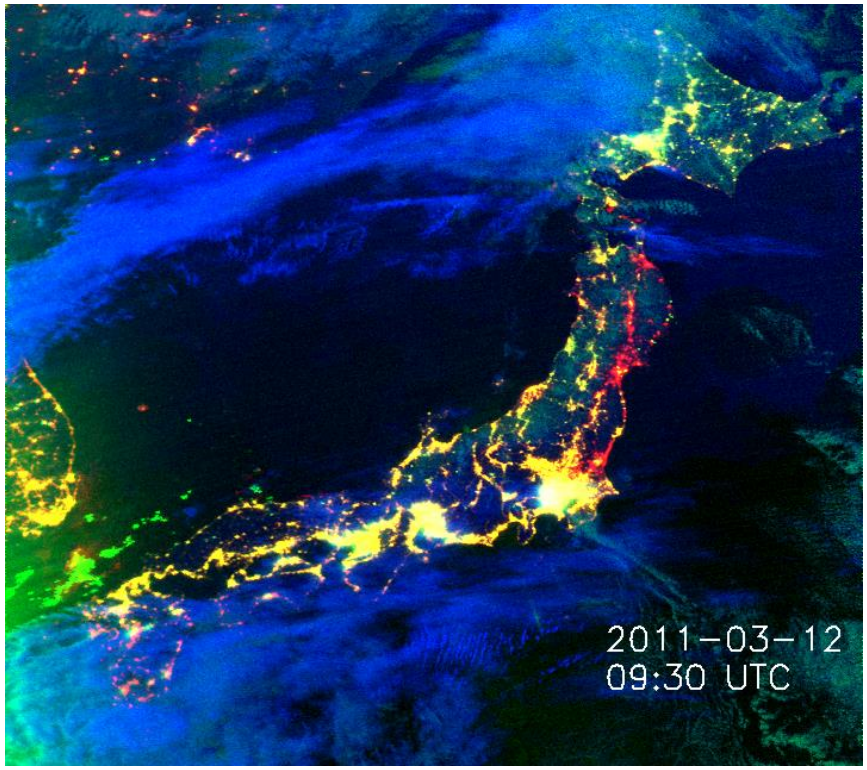
Accomplishment
Power Outages in Japan – 12 Mar 2011

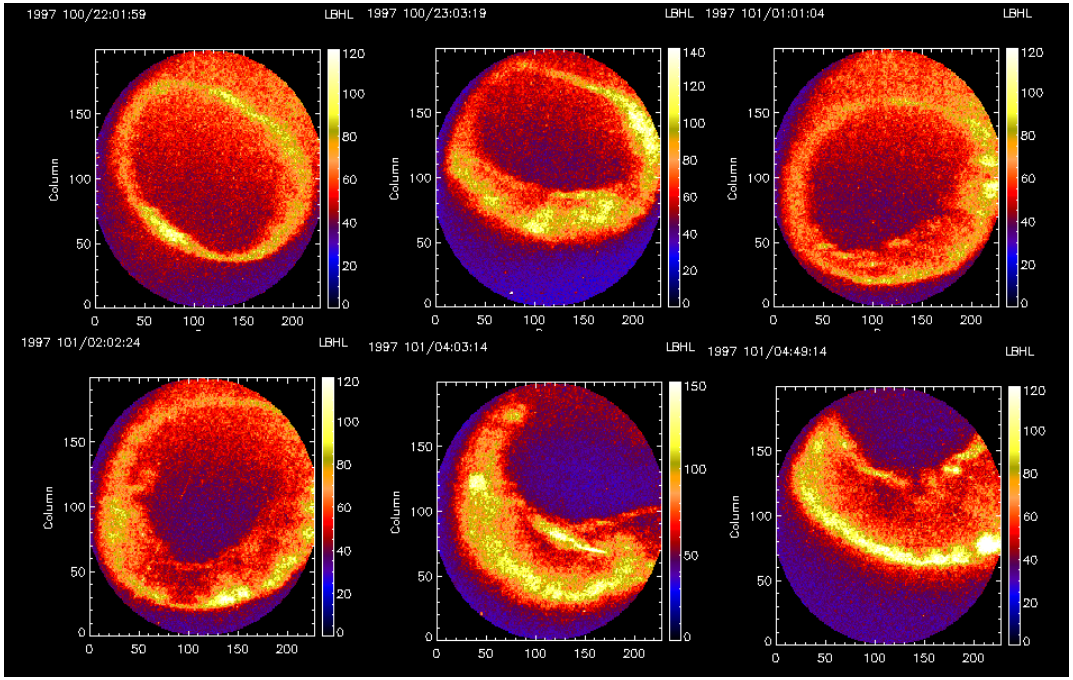
Color image depicts Japanese power outages detected using DMSP F-18 nighttime imagery data on 12 March 2011. Power outage image is a color composite made using the 2010 stable lights as red, that night's visible band data as green and that night's thermal band data as blue. Blue is then inverted to make cold clouds look bright blue. Yellow areas are locations where detected lights were on. Power outages are indicated by the red color surrounding Mito (north of Tokyo), Sendai, and a belt extending north from Sendai.

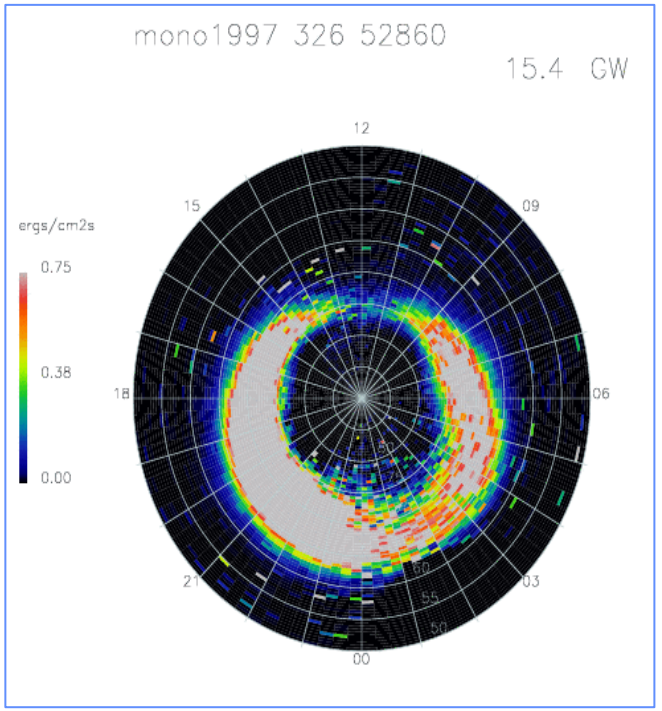


<u>Impacts to operational space weather</u>: The National Institute and Information Communications Technology (NiCT) will temporary suspend receipt of ACE data to restore some infrastructure capabilities impacted by the Japanese earthquake and tsunami. The overall impact is the loss of 8-hours/day RT contact with ACE.

Accomplishment
Ovation-Prime Validation

Janet Machol recently completed a validation effort for the Ovation Prime auroral product originally planned for SWPC operations. UltraViolet Imager (UVI) data from the NASA POLAR satellite was used to forecast the occurrence of localized auroral displays using ACE data as the driver. The product was found to be 80% accurate in predicting the occurrence of aurora.





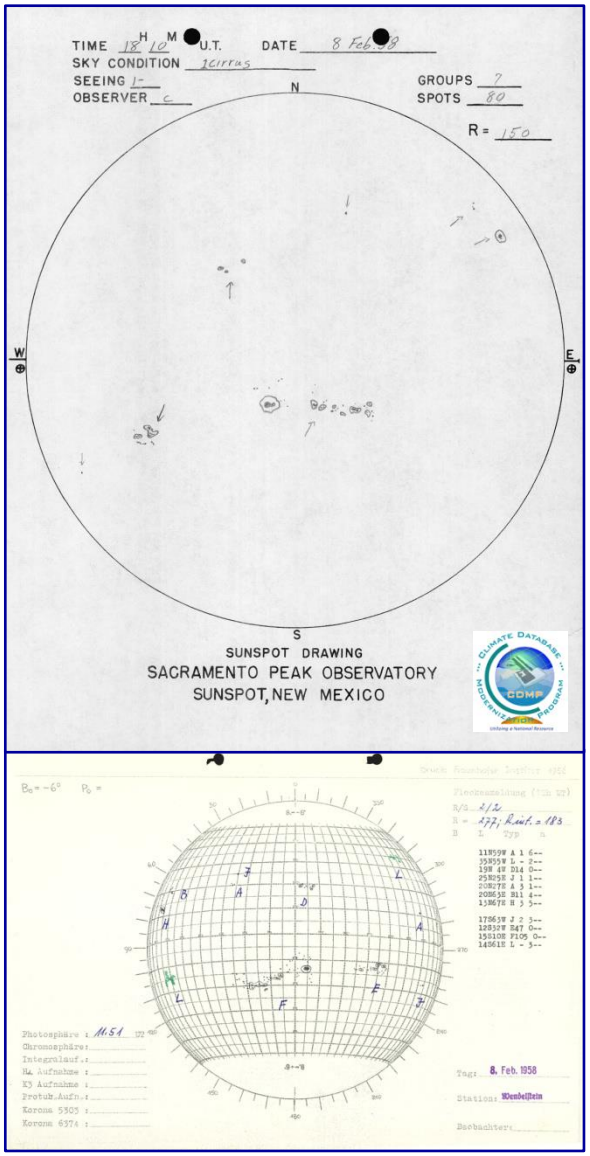
Forecasting aurora is of interest to the public in addition to having high military value. Ovation-prime products are now available through the STP web site.

Accomplishment
Announcement – Sac Peak Drawings

SolarNews Letter (08 Mar 11), Karen Horan (NGDC) and Alexei Pevtsov (NSO) – The NOAA National Geophysical Data Center (NGDC) and the National Solar Observatory (NSO) are pleased to announce the availability of sunspot drawings prepared by the Sacramento Peak (Sac Peak) Observatory (now the National Solar Observatory at Sacramento Peak) for the period 1946 to mid-2004. Beginning late 2003 these hand drawings were replaced by the white-light images from ISOON with semi-automatic active region identification.

These synoptic drawings detail the observations of sunspots and photospheric plage regions for each day when data were available. The original drawings were provided by the National Solar Observatory and professionally digitized through the NOAA ***Climate Data Modernization Program (CDMP)***. Scanned images of the full dataset are available in Portable Document Format (PDF) at the website provided below - higher-resolution Tagged Image File Format (TIFF) images are also available from NGDC by request. The website includes supporting metadata and documentation. Additional information, corrections and comments would be greatly appreciated. Please send all inputs to solar@noaa.gov.

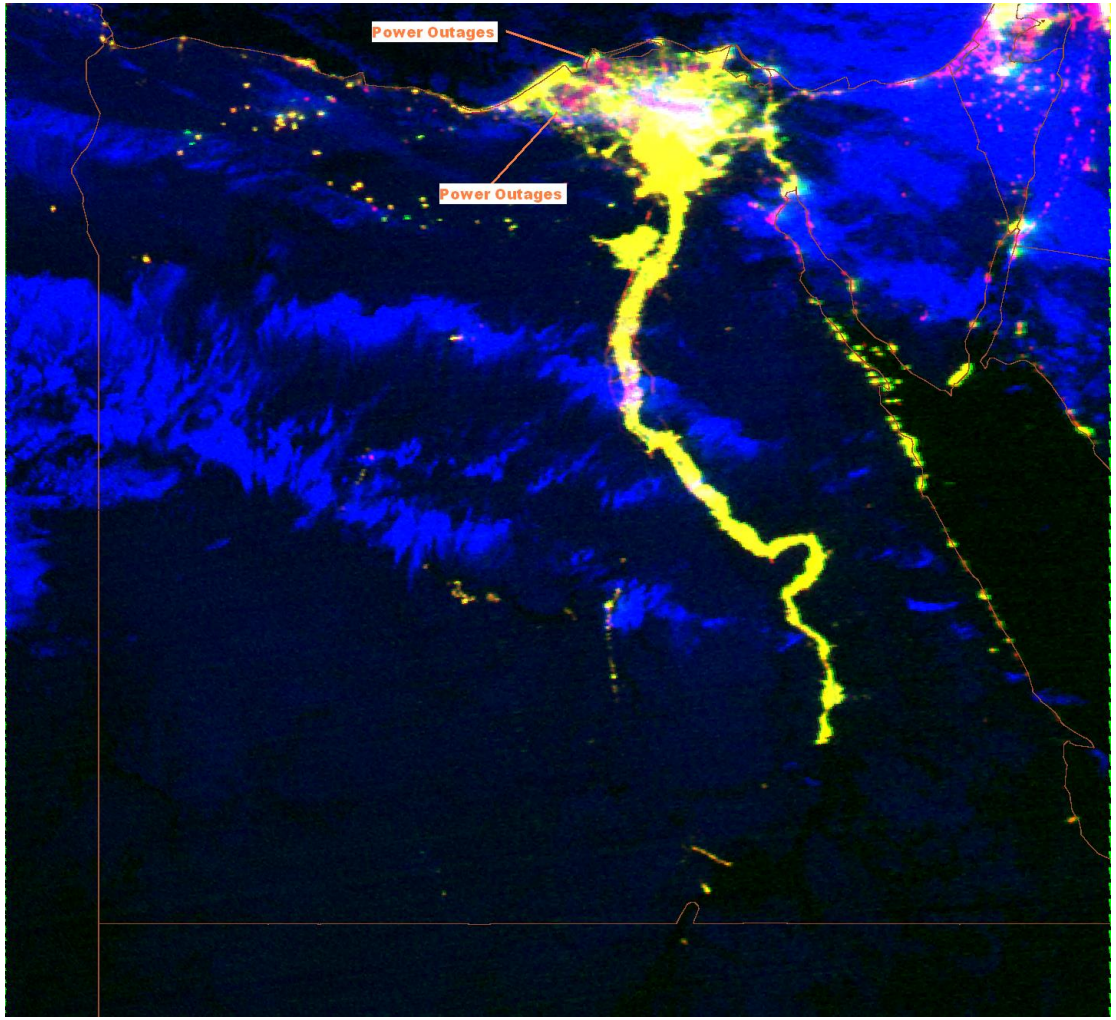
Sac Peak drawings are available from NGDC at:
http://www.ngdc.noaa.gov/nndc/struts/results?op_0=eq&v_0=SacPeak&t=102827&s=13&d=8&d=110&d=9



Complementary Wendelstein Full Sun Drawing

Accomplishment
Nighttime Lights of Egypt

Nighttime Lights Over Egypt Reveal Local Power Outages - Nighttime lights imagery collected on 30 Jan 2011 by the USAF Defense Meteorological Satellite Program (DMSP) have been used to monitor the occurrence of power outages within Egypt during their political strife. False color images prepared by the Earth Observation Group of the National Geophysical Data Center (NGDC) are used to identify regions of localized power outages as indicated by absence of lighting in areas referenced to the year 2010 stable lights mask (January-June). The findings are that the power is on within most of Egypt except for for some regional outages to the south and east of Alexandria.



Key: Yellow = Lights on; Red = Power outage; Blue = Clouds; Magenta = Lights obscured by clouds

Accomplishment
SWPC Products Available On-line

On-line (daily reports):

- Daily Summary of Space Weather Operations
- GEOALERTS
- Solar & geophysical Activity Reports and 3-day Forecast
- Solar & Geophysical Activity Summary
- Solar Event Reports (Edited Events)
- Space Weather Event Reports
- Solar Region Summary

Coming Soon:

- "The Weekly" – Preliminary Report & Forecast of Solar Geophysical Data
- Daily Solar Indices (Annual)
- Daily Geomagnetic Indices (Annual)
- Daily Particle Indices (Annual)
- Solar Radio Flux Values
- Solar Radio Burst Event Reports

SWPC SPACE WEATHER PREDICTION CENTER

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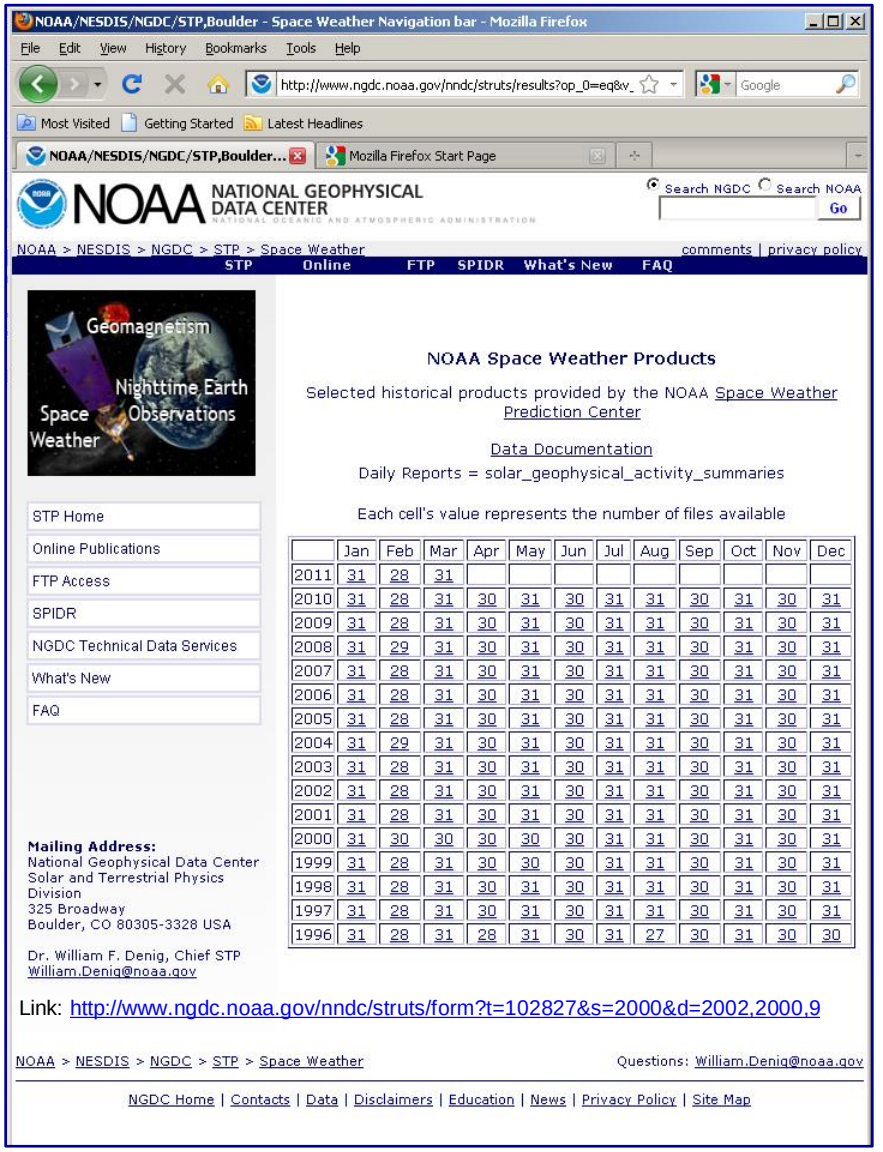
:Product: Solar Region Summary
:Issued: 2011 Apr 07 0030 UTC
# Prepared jointly by the U.S. Dept. of Commerce, NOAA,
# Space Weather Prediction Center and the U.S. Air Force.
#
Joint USAF/NOAA Solar Region Summary
SRS Number 97 Issued at 0030Z on 07 Apr 2011
Report compiled from data received at SWO on 06 Apr
I.  Regions with Sunspots.  Locations Valid at 06/2400Z
Nmbr Location  Lo  Area  Z   LL   NN Mag Type
1183 N15W71   140  0040 Hsx  02   01 Alpha
1184 N16W41   110  0110 Dso  10   09 Beta
1185 N22E38   033  0070 Cso  05   05 Beta
1186 N22E58   013  0010 Axx  01   01 Alpha
IA. H-alpha Plages without Spots.  Locations Valid at 06/2400Z Apr
Nmbr  Location  Lo
1181  S27W78   149
II. Regions Due to Return 07 Apr to 09 Apr
Nmbr Lat    Lo
None
```



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011	31	28	31									
2010	31	28	31	30	31	30	31	31	30	31	30	31
2009	31	28	31	30	31	30	31	31	30	31	30	31
2008	31	29	31	30	31	30	31	31	30	31	30	31
2007	31	28	31	30	31	30	31	31	30	31	30	31
2006	31	28	31	30	31	30	31	31	30	31	30	31
2005	31	28	31	30	31	30	31	31	30	31	30	31
2004	31	29	31	30	31	30	31	31	30	31	30	31
2003	31	28	31	30	31	30	31	31	30	31	30	31
2002	31	28	31	30	31	30	31	31	30	31	30	31
2001	31	28	31	30	31	30	31	31	30	31	30	31
2000	31	30	30	30	30	30	31	31	30	31	30	31
1999	31	28	31	30	30	30	31	31	30	31	30	31
1998	31	28	31	30	31	30	31	31	30	31	30	31
1997	31	28	31	30	31	30	31	31	30	31	30	31
1996	31	28	31	28	31	30	31	27	30	31	30	30

OUTLINE
Solar & Terrestrial Physics Division

STP Program Overview

Milestones & Performance Measures

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Accomplishments

Special Interest Items

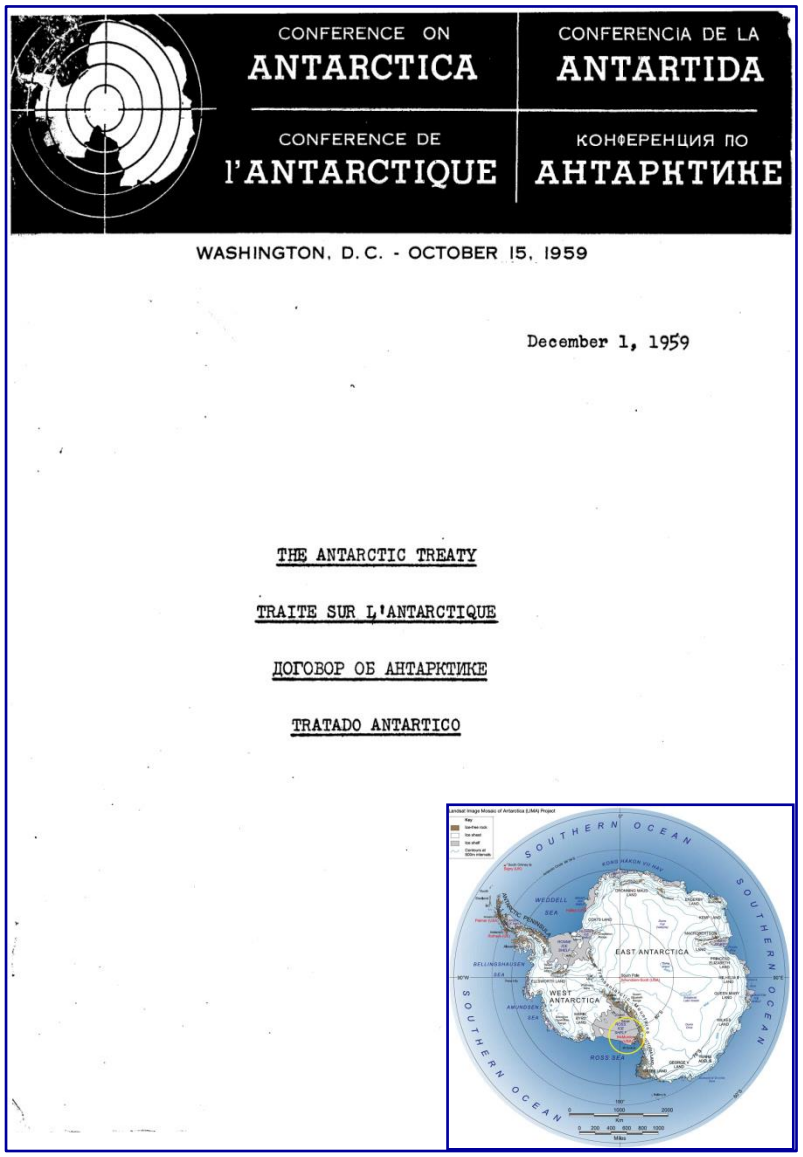
Recommendations on "*The Way Ahead*"

Issues & Summary

Special Interest Item
DMSP Data Received Via McMurdo

The Nighttime Lights group anticipates receiving DMSP data via the McMurdo receiving station. Provisions of the Antarctic Treaty require that "Scientific observations and results from Antarctica shall be exchanged and made freely available." Sharolyn Anderson is working with AFWA to ensure USAF compliance with the treaty. Benefits to NGSG include receipt of DMSP data with ~50 minute latency (versus 101 min) and increased availability of high-resolution OLS FINE data.

McMurdo Station Protected Satellite Dish



CONFERENCE ON ANTARCTICA | CONFERENCIA DE LA ANTARTIDA
CONFERENCE DE l'ANTARCTIQUE | КОНФЕРЕНЦИЯ ПО АНТАРКТИКЕ

WASHINGTON, D.C. - OCTOBER 15, 1959

December 1, 1959

THE ANTARCTIC TREATY

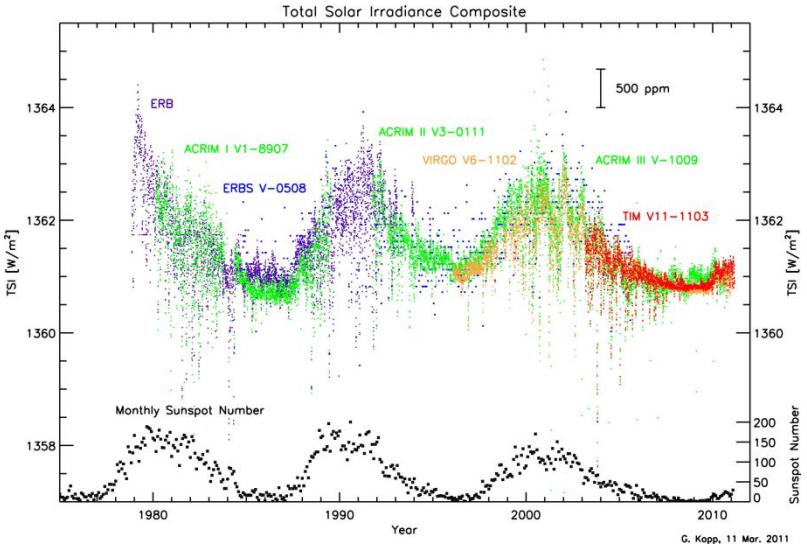
TRAITE SUR L'ANTARCTIQUE

ДОГОВОР ОБ АНТАРКТИКЕ

TRATADO ANTARTICO

Special Interest Item
Glory Satellite Failure

The Glory satellite (NASA) failed to reach orbit on 04-Mar due to a stuck faring which, apparently, was the same failure that doomed the OCO mission in 2009. The Total Solar Irradiance Monitor (TIM) on the Glory satellite was to replace the aging TIM sensor on the SORCE satellite, launched in January 2003. The only remaining solar irradiance mission, PICARD (CNES), was launched on 15 Jun 2010 but the quality of the data is not yet known. The Glory launch failure puts added pressure on the JPSS program to fly the Total Solar Irradiance Sensor (TSIS). STP has been assigned responsibility for managing the TSIS dataset. WRP intern, Lisa Risso, will spend this coming summer reviewing STP's "Global Change" database and web page, http://www.ngdc.noaa.gov/stp/solar/globalchange.html.



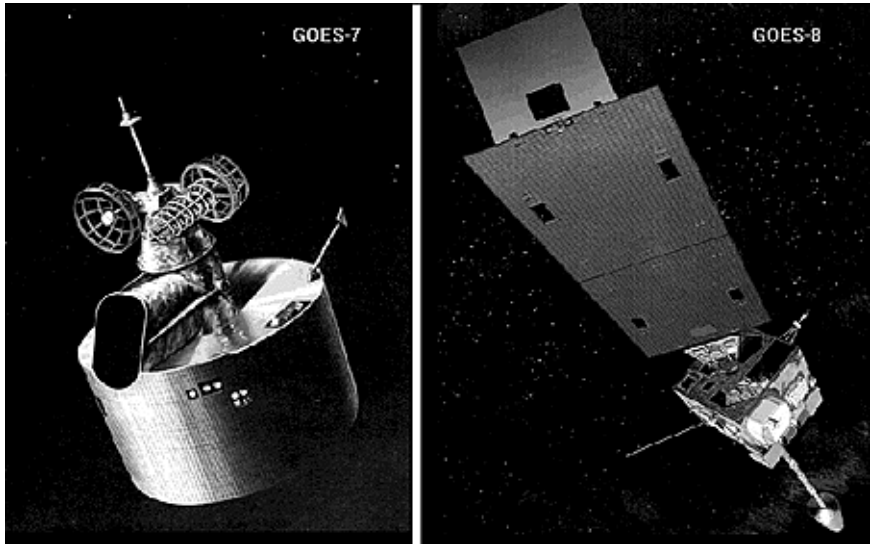
TSI Record: Courtesy Greg Kopp (LASP)

Glory satellite & fairing

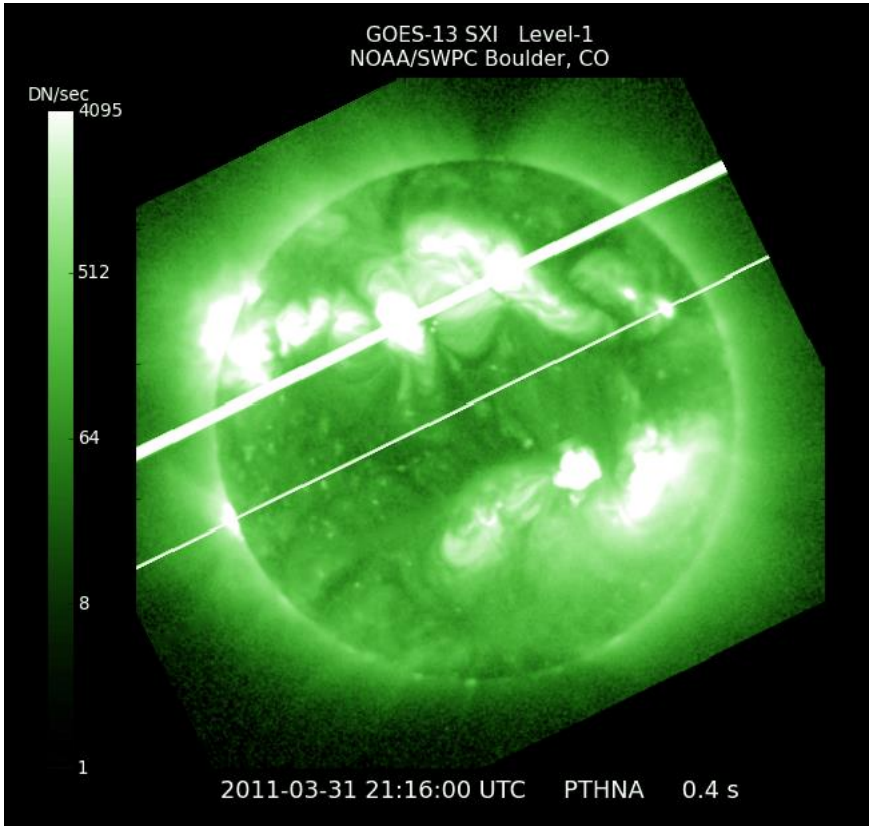
Glory Launch
04 March 2011

Special Interest Item
GOES I-M / SXI

GOES I-M (8-12) Satellite Series era came to an end on 28-Feb-11 when NGDC received the last data from the GOES-11 Space Environment Monitor subsystem. This I-M series, built by Space Systems Loral, began in 1994 with the launch of 3-axis stabilized GOES-8 and represented a significant change from prior GOES which were spin-stabilized, rotating at nearly 100 RPM. GOES 11 remains the current operational GOES-West satellite.

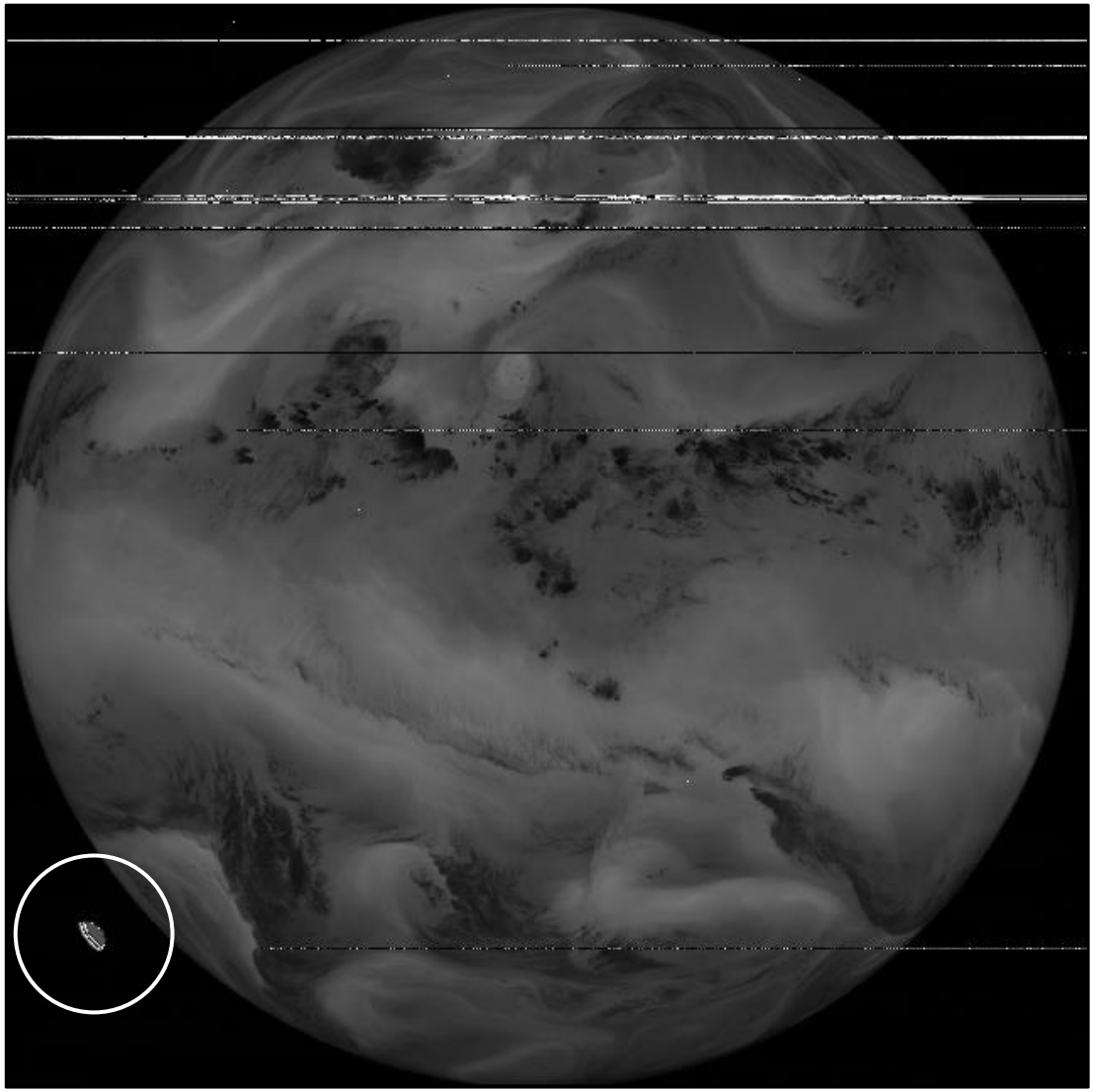


GOES-13 SXI Level-1 Images are now being ingested from SWPC. On 30-Mar NGDC began receiving the Level-1 images from the GOES-13 SXI (damaged in 2006). Level-1 product is properly oriented.



Special Interest Item
UFO Seen in Historical GOES Imagery

NOAA has no comment on apparent UFO in early GOES weather imagery – Amateur enthusiast, Chris Cobb, noted an anomalous structure in infrared imagery taken by GOES-8 on June 8, 1995 11:45 UT at 75.3 degrees west longitude. A search of the University of Wisconsin GOES imagery archives confirm that the structure exists in all wavelengths of original full-resolution IR imagery but experts are at a loss to explain what it is. Some concede that the saucer shaped object exhibits a heat pattern consistent with a propulsion system but there has been no official comment from NOAA.



Special Interest Item
CORS-In-CLASS Status

TIMELINE:

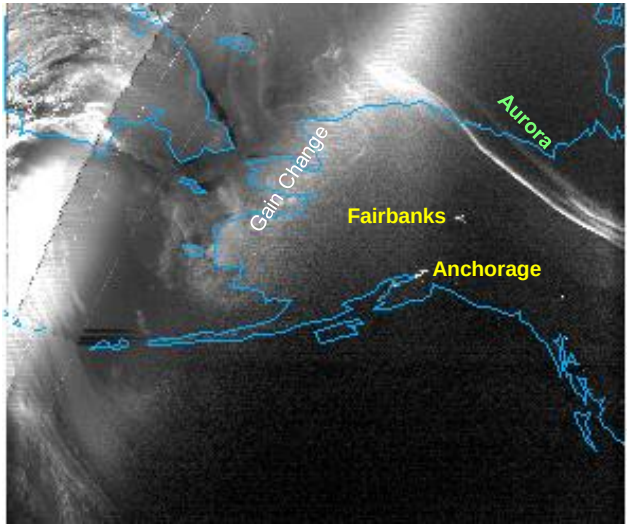
- 2010 Oct 20 – CORS NGDC team discovered email issue
- 2010 Oct 26 – CLASS release 5.4 (includes CORS) – INTERIM progress by NGDC, while awaiting fix
  - ✓ Rob develops code
  - ✓ Rob/Peter study performance between NGDC/CLASS: protocol investigation, speed, capacity, etc
  - ✓ Rob re-implements code for new protocol
  - ✓ CLASS fix to be developed in PERL to output status file
  - ✓ Rob adds in code to accommodate new file
  - ✓ ICD review
- 2011 Apr 05 – CLASS release 5.4.1.3
  - ✓ Test for NGDC/CLASS interoperability -- does their fix work?
  - ✓ We have a set of "canned" tests to run against fix
- 2011 Apr 06 – Rob/Justin coordinate with CLASS developer to make small adjustment to CLASS cron
- 2011 Apr 074 – Rob initiates testing of CLASS PERL script

GOAL: Complete testing of CLASS release 5.4.1.3 by end of April

CORS-in-CLASS: CORS ingest to start after testing is complete, pending discovery of any issues

Special Interest Item
NGDC Auroral Observations

Aurora over Fairbanks – 01Mar11



DMSP F18 @ 0528 UT 02Mar11

Rob Redmon attended and presented a paper at the recent AGU Chapman Conference on the "Relationship between Auroral Phenomenology and Magnetospheric Processes" held in Fairbank (AK), 28February – 04March. Clear skies and active geo-magnetic conditions provided for outstanding auroral displays on 01Mar11 (local time) that were viewed simultaneously from the ground and space. Mr Redmon's presentation demonstrated a scientifically credible utilization of NGDC's satellite space environmental data holdings to NOAA constituents. Additional auroral photographs from the meeting are available to the community through the NGDC Auroral Resources Toolkit.

AGU Chapman Conference on Relationship
Between Auroral Phenomenology and Magnetospheric Processes

Fairbanks, Alaska USA
28 February – 4 March 2011

Special Interest Item
John Holdren on Space Weather

The New York Times
The Opinion Pages

I.H.T. Op-Ed Contributor

Celestial Storm Warnings

By JOHN P. HOLDREN and JOHN BEDDINGTON
Published: March 10, 2011

"Weather is often in the headlines. But largely unnoticed last month was the weather that forced airlines flying the polar route between the United States and Asia to detour south over Alaska. This unusual routing was a response to a "space weather" event — an enormous ejection of charged gas from the Sun capable of scrambling terrestrial electronic instruments. . . ."

Drs. Holdren & Beddington also discussed the technological impacts of a great geomagnetic storm such as the 1859 Carrington event.

John P. Holdren

Sir John Rex Beddington

John P. Holdren is Assistant to the President for Science and Technology, Director of the White House Office of Science and Technology Policy, and Co-Chair of the President's Council of Advisors on Science and Technology (PCAST).

Sir John Rex Beddington – Chief Scientific Adviser to the UK Government

OUTLINE
Solar & Terrestrial Physics Division

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Issues & Summary

NGDC Space Weather
The Past

Observations:

- The original rationale for STP was war-time ionospheric monitoring to support military long-range radio communications
- The STP Space Weather program was heavily influenced by a World Data Center (WDC) mentality of international data collection and exchange for a pre-internet based society
- Over the years the group assimilated technology areas offered up by others (solar [CU], aurora [UAF], cosmic rays [UM], geomagnetism [WDC-Solid Earth Geophysics])
- NGDC was popularly viewed as the archive of last resort for environmental datasets of sometimes limited scientific value
- Other datasets were acquired based on personal interests and professional contacts with limited oversight

NGDC Space Weather
The Issue

Observations:

- Limited manpower and budget force a reconsideration of STP's role as a data provider in today's society
- Many datasets acquired have not kept pace with technology and do not optimally serve NOAA and our user constituents
- The extensive breadth of datasets overseen by STP has been at the expense of scientific depth
- STP is not optimally engaged with the scientific user communities that depend on high-quality, effective datasets
- The WDC structure has been dissolved to be replaced by a more relevant international structure in the World Data Service (WDS)

NGDC Space Weather
The Way Forward

Observations:

- STP needs to become better aligned with NOAA objectives for agency-relevant environmental data including agency partners
- Safeguarding NOAA's environmental datasets should be STP's highest priority with particular emphasis on satellite data
- STP must become more actively engaged with the operational and scientific communities to optimally align NOAA's historical datasets to need
- Within the WDS, STP should contribute relevant datasets to increase the value and accessibility of NOAA's environmental data and information

NGDC Space Weather
Mission & Vision

Mission – *To be the Nation's steward of retrospective operational space environmental data and information*

Vision – *An informed society reliant on accurate and effective historical space weather data for emergency planning, environmental specifications and heliophysics research*

Goal – *Ensure that NGDC is the authoritative provider of high-quality, accessible, historical space environmental datasets derived from the Nation's operational space weather services*

Priorities (Highest to Lowest):

1. Stewarding NOAA's space environmental satellite datasets and related information
2. Managing USAF retrospective operational space weather satellite & ground data
3. Participating in the World Data Service by contributing NOAA and USAF datasets plus related data services

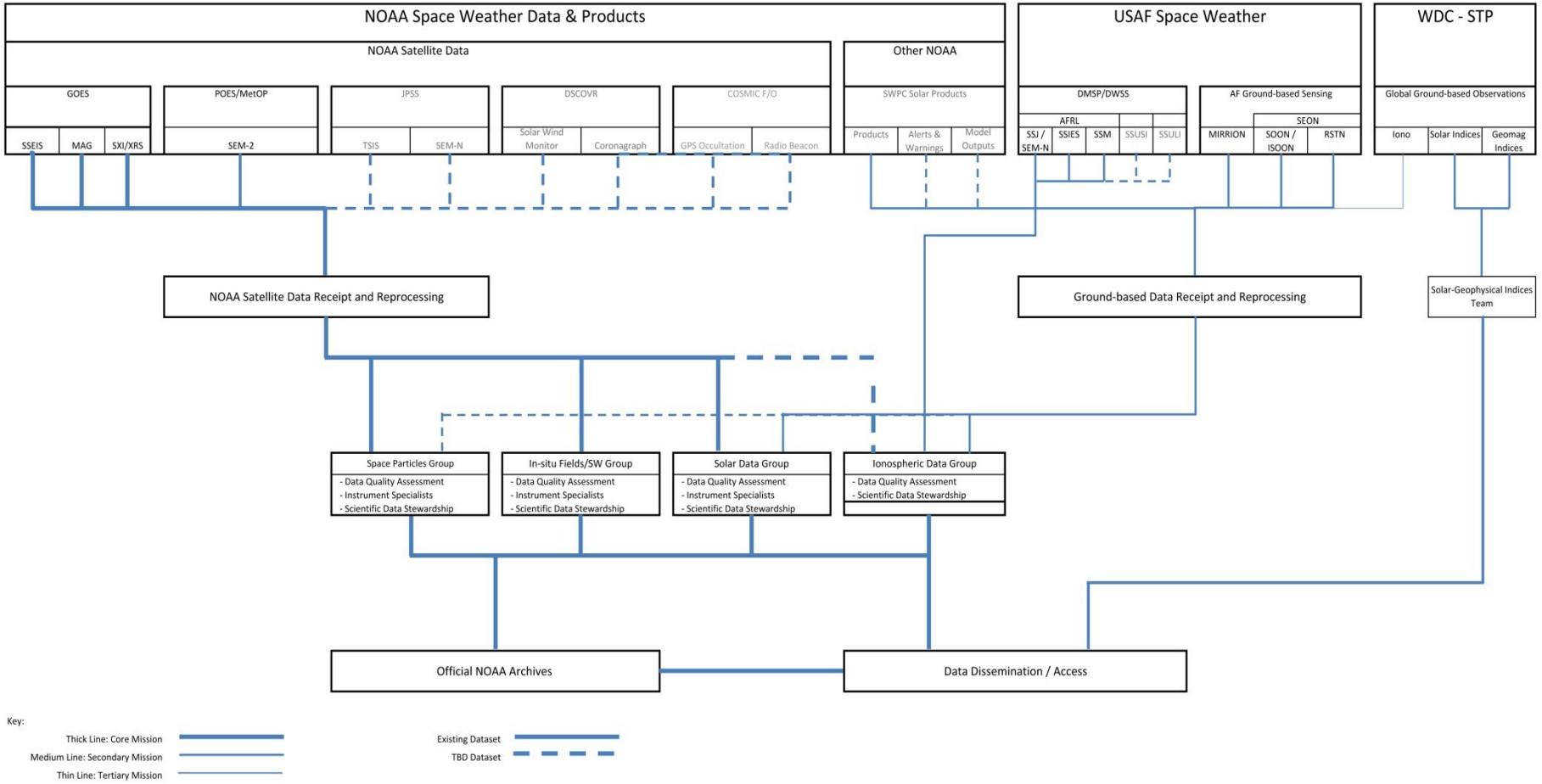
NGDC Space Weather
Becoming More Relevant - Summary

Recommended Changes:

- Satellite Data – Increase the quality and accessibility of NOAA (& USAF) satellite datasets and derived products
- Solar Data Group – Refocus data collections on SWPC products and information, including USAF datasets
- Ionospheric Data Group – Re-align ionosonde responsibilities to T. Bullett's group and refocus on user services
- Indices – Acquire authoritative geophysical indices & information to support research, including model development
- Geomagnetic Program – De-emphasize the overall program but assess inclusion of magnetic means in SPIDR

If you don't like change, you've going to like irrelevancy even less." (General Eric Shinseki, retired Chief of Staff, U. S. Army)

NGDC Space Weather
Proposed Structure – Space Weather



OUTLINE
Solar & Terrestrial Physics Division

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Recommendations on "*The Way Ahead*"

Issues & Summary

Issues & Summary

STP FY11 Publications – YTD: 14

Aubrecht, C., M. Stojan-Dolar, A. de Sherbinin, M. Jaiteh, T. Longcore, and **C. Elvidge** (2010), "Lighting governance for protected areas and beyond – Identifying the urgent need for sustainable management of artificial light at night", *Earthzine*, IEEE, 20 December 2010.

Denig, W., D. Cooke, and D. Ferguson (2010), Spacecraft Charging and Mitigation, *Space Weather, 8, S10007,* doi:10.1029/2010SW000632.

Eakin, C.M., C.J. Nim, R.E. Brainard, C. Aubrecht, **C.D. Elvidge**, K. Gledhill, F. Muller-Karger, P.J. Mumby, W.J. Skirving, A.E. Strong, M. Wang, S. Weeks, F. Wentz, and **D.C. Ziskin** (2010), "Monitoring Coral Reefs from Space", *Oceanography, 23*, pp 118-133.

Earle, G.D., **P. Bhaneja**, P.A. Roddy, C.M. Swenson, A. Barjatya, R.L. Bishop, **T.W. Bullett**, G. Crowley, **R. Redmon**, K. Groves, R. Cosgrove and S.L. Vadas (2010), A comprehensive rocket and radar study of midlatitude spread *F*, *J. Geophys. Res.*, 115, A12339, doi:10.1029/2010JA015503.

Ferguson, D.C., **W.F. Denig** and J.V. Rodriguez (2011), Plasma Conditions During the Galaxy 15 Anomaly and the Possibility of ESD from Subsurface Charging, Proceedings of the 49th AIAA Aerospace Sciences Meeting in Orlando, Florida, 04-07 January 2011.

Ghosh, T., R. Powell, **C.D. Elvidge**, **K.E. Baugh**, P.C. Sutton and **S. Anderson** (2010), "Shedding light on the global distribution of economic activity", The Open Geography Journal , 3, 147-160, doi: 10.2174/1874923201003010147.

Ghosh, T., **C.D. Elvidge**, P.C. Sutton, **K.E. Baugh**, **D. Ziskin** and B.T. Tuttle (2010), "Creating a Global Grid of Distributed Fossil Fuel CO2 Emissions from Nighttime Satellite Imagery", Energies, 3(12), 1895-1913.

Newell, P. T., T. Sotirelis, K. Liou, A. R. Lee, S. Wing, J. Green, and **R. Redmon** (2010), Predictive ability of four auroral precipitation models as evaluated using Polar UVI global images, *Space Weather, 8*, S12004, doi:10.1029/2010SW000604.

Redmon, R. J., D. Anderson, R. Caton, and **T. Bullett** (2010), A Forecasting Ionospheric Real-time Scintillation Tool (FIRST), Space Weather, 8, S12003, doi:10.1029/2010SW000582.

Redmon, R. J., W. K. Peterson, L. Andersson, E. A. Kihn, **W. F. Denig**, M. Hairston, and R. Coley (2010), Vertical thermal O+ flows at 850 km in dynamic auroral boundary coordinates, *J. Geophys. Res., 115*, A00J08, doi:10.1029/2010JA015589.

Small, C., **C.D. Elvidge**, D. Balk and M. Montgomery (2011), Spatial scaling of stable lights, *Remote Sensing of the Environment, 115*, 269-280.

Sutton, P.C., M.J. Taylor and **C.D. Elvidge** (2010), Using DMSP OLS Imagery to Characterize Urban Populations in Developed and Developing Countries, in “Remote Sensing of Urban and Suburban Areas”, *Volume 10*, Part 2, Eds. Rashed, Tarek, Jürgens, Carsten, Springer, 329-348, doi: 10.1007/978-1-4020-4385-7_17.

Takahashi, K.I., R. Terakado, J. Nakamura, Y. Adachi, **C.D. Elvidge** and Y. Matsuno (2010), In-use stock analysis using satellite nighttime light observation data, *Resources, Conservation and Recycling, 55 (2)*, 196-200, doi:10.1016/j.resconrec.2010.09.008.

Zhao, N., **T. Ghosh**, N.A. Currit and **C.D. Elvidge** (2011), Relationships Between Satellite Observed Lit Area and Water Footprints, *Water Resource Management*, 11 March 2011, doi 10.1007/s11269-011-9804-3.

Issues & Summary

Solar & Terrestrial Physics Division

- ✓ Loss of key personnel has a severe mission impact (3QFY10) - *NLAI*
- **Satellite processing transition from SWPC (4QFY09) – active**
- ✓ Continuity of solar data services (1QFY09) – *NLAI*
- ✓ *Refocus of NWS/SWPC Objectives (2QFY08) – NLAI*
- **NightSat Mission Concept (1QFY08) – active**
- ✓ *NGS Aerial Photography (1QFY08) – NLAI*
- ✓ *DMSP Data in CLASS (1QFY08) – NLAI*

Metrics (FY11 YTD)

Papers Published: 14

Reports Published:12

Papers presented: 37

Supporting Materials in Backup Slides

- **Meetings 2QFY11**
- **Upcoming Meetings/Travel – 3QFY11**
- **STP FY11 Presentations (YTD)**

QUESTIONS?

Issues & Summary
Meetings – 2QFY11

Supported Meetings (2QFY11)

- National Radio Science Meeting (URSI) – 05-08 Jan 2011, Boulder, CO (*R. Redmon, T. Bullett, P. Elespuru*)
- Geospatial World Forum – 18-21 Jan 2011, Hyderabad, India (*Tilo Ghosh*)
- Algorithm Development Language (ADL) 2.0 Technical Interchange Meeting – 19-20 Jan 2011, Madison, WI (*P. Meade*)
- American Meteorological Society (AMS) – 23-27 Jan 2011, Seattle, WA (*W. Denig*, *E. Erwin, P. Purcell*)
- Artificial Intelligence in the Earth's Magnetic Field Study, 26-28 Jan 2011, Uglich, Russia (*J. Mabie*)
- NRC Decadal Survey R2O-O2R Working Group Meeting – 07-08 Feb 2011, Irvine, CA (*W. Denig*)
- JPSS Users' Meeting – 09-10 Feb 2011, Aurora, CO (*P. Purcell, P. Meade*)
- 31th Asia-Pacific Advanced Network (APAN) – 21-24 Feb 2011, Hong Kong, China (*C. Elvidge*)
- Chapman Conference: Relationship between Auroral Phenomenology and Magnetospheric Processes – 27 Feb – 04 Mar 2011, Fairbanks, AK (*R. Redmon*)
- SEM-N Technical Interchange Meeting, 15 Mar 2011, Boulder, CO (*Multiple*)
- Boulder Solar Day Workshop – 18 Mar 2011, Boulder, CO (*W. Denig, J. Machol*)
- Nightsat Proposal Workshop – 22 Mar 2011, Moffett Field, CA (*C. Elvidge*)
- Joint Polar Satellite Systsem (JPSS) GRAVITE Workshop – 23-23 March 2011, Greenbelt, MD (*P. Meade*)
- Global Vulcan Project Kickoff Meeting – 30 Mar 2011, Tempe, AZ (*C. Elvidge*)

Issues & Summary
Upcoming Meetings/Travel – 3QFY11

Upcoming Meetings (3QFY11):

- Global Assimilation of Ionospheric Measurements – xx-xx April 2011, Omaha, NE (*T. Bullett*)
- CIRES Rendezvous – 22 April 2011, Boulder, CO (*Multiple*)
- Space Weather Workshop (SWW) – 26-29 Apr 2011, Boulder, CO (*Multiple*)
- High Energy Particle Precipitation in the Atmosphere (HEPPA) Workshop – 09-11 May 2011, Granada, Spain (*W. Denig*)
- Joint Polar Satellite System/Defense Weather Satellite Systems (JPSS/DWSS) Common Ground System Forum – 25-26 May 2011, Asheville, NC (*P. Purcell*)
- Joint Urban Remote Sensing Event – 11-13 April 2011, Munich, Germany (*C. Elvidge*) - ????
- Ionosperic Effects Symposium – 16-19 May 2011, Alexandria, VA (T. Bullett)
- Joint Coupling, Energetics and Dynamics of Atmospheric Regions (CEDAR) – Geospace Environment Modeling (GEM) Workshop – 26 Jun – 01 Jul, Santa Fe, NM (*R. Redmon. W. Denig*) – *tentative*
- Space Weather Enterprise Forum – 21 Jun 2011, Washington, D.C. (W. Denig) – *tentative*
- International Union of Geodesy and Geophysics (IUGG) – 26 Jun - 08 Jul 2011, Melbourne, Australia - *tentative*

Other Planned Travel (3QFY11):

- Ionosonde Installation – xx-xx April 2011, *city?*, Puerto Rico
- Ionosonde Installation – xx-xx May 2011, *city?*, Ethiopia
- Sounding Rocket Launch – 13-30 June 2011, Wallops Island, VA

Issues & Summary

STP FY11 Presentations – Pg 1 – YTD: 37

CIRES Innovative Research Program, 17 November 2010, Boulder, CO

– Passive Radio Imaging in Water Resource Management, Glaciology and Space Weather Monitoring (Poster), N.A. Zabotin, G. Godin and **T.W. Bullett.**

Space Research Institute of the Russian Academy of Science, 10 November 2010, Moscow, Russia

– Web Service Access to NOAA/NGDC Space Weather Data (Oral), **P. Elespuru.**

– Overview of the Colorado Student Space Weather Experiment (CSSWE) CubeSat Satellite (Oral), **P. Elespuru.**

International School for Atmospheric Radars, 15-26 November 2010, Chung-Li, Taiwan

– High Frequency Radars and Ionospheric Sounding (Invited Lecture), **T. Bullett.**

US-India US-India Network Enabled Research Collaboration Workshop, 05-07 December 2010,New Delhi, India.

– Potential for Expanded Exchange of Earth Observation Satellite Data for Climate, Weather and Environmental Studies (Oral), **C.E. Elvidge.**

Indian Space Research Organization (ISRO) National Remote Sensing Centre, 09 December 2010, Hyderabad, India

– Nighttime Lights of India: 1992-2010 (Oral), **C.E. Elvidge.**

Indian Space Research Organization (ISRO) Space Science Institute, 10 December 2010, Trivandrum, India

– Nighttime Lights of India: 1992-2010 (Oral), **C.E. Elvidge.**

Loreta College, 13 December 2010, Kolkata, India

– Nighttime Lights of India: 1992-2010 (Oral), **C.E. Elvidge.**

Presidency College, 13 December 2010, Kolkata, India

– Nighttime Lights of India: 1992-2010 (Oral), **C.E. Elvidge.**

American Geophysical Union (AGU) Fall Meeting, 13-17 December 2010, San Francisco, CA

– A global view of O+ upwelling and outflow rates between DMSP and POLAR (Poster), SM33B-1894, **R.J. Redmon**, W.K. Peterson, L. Andersson, E.A. Kihn and **W.F. Denig.**

– A Prototype Web-based system for GOES-R Space Weather Data (Poster), IN43A-1374**, A. Sundaravel** and **D.C. Wilkinson.**

– Auroral Resources: Dataset Access and Interactive Visualization (Poster), IN43A-1395, **P. Elespuru**, **R.J. Redmon**, E.A. Kihn, M. Zhizhin and D. Medvedev.

– Current Operations and Future Plans for Forecasting Products Based on NOAA LEO Satellite Observations (Oral), SM54A02, **J.C. Green**, J.L Machol, **W.F. Denig**, R.A. Viereck, R. Rutledge and J. Kunches .

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American Geophysical Union (AGU) Fall Meeting, 13-17 December 2010, San Francisco, CA – *Continued*

– Enhancing Natural Hazards Data with Photographs (Poster), IN33B1304, H.L. McCullough, J.D. Varner and **R.J. Redmon.**

– Gas Flaring Volume Estimates with Multiple Satellite Observations (Poster), A43D-0271, **D.C. Ziskin**, **C. Elvidge**, **K. Baugh**, **T. Ghosh** and F.C. Hsu.

– Modeling the gravity and magnetic pressure driven currents in the F-region ionosphere (Poster), SA51B-1631, **P. Alken**, S. Maus, A. Richmond and A. Maute.

– Multipoint Observations of the Large Substorm Associated with the Galaxy 15 Anomaly (Oral), SM22B-05, H.J. Singer, P.T. Loto'aniu, J.C. Green, J.V. Rodriguez, B.J. Anderson, J.J. Love, V. Angelopoulos, D.N. Baker, M.G. Connors, **W.F. Denig**, E.F. Donovan, O. LeContel, T.G. Onsager, T. Nagatsuma, A. Runov and E.L. Spanswick.

– New Operational Algorithms for Particle Data from Low-Altitude Polar-Orbiting Satellites (Poster), SM51A-1766, **J.L Machol**, **J.C. Green**, J.V Rodriguez, T.G. Onsager and **W.F. Denig.**

– New Products from New Satellites - GOES NOP Satellite Series Space Weather Data and Their Archive for Retrospective Access (Poster), SM51A-1767, **D.C. Wilkinson.**

– NGDC Geomagnetic Observatory Holdings (Poster), GP11A-0749, **J.J. Mabie.**

– Space Weather Conditions at the Time of the Galaxy 15 Spacecraft Anomaly (Oral, Invited), SH31D03, **W.F. Denig**, **J.C. Green**, **D.C. Wilkinson**, J.V. Rodriguez, H.J. Singer, P.T. Loto'aniu, D.A. Biesecker and W. Murtagh.

– The Future of Space Environment Monitoring in Low Earth Orbit (Poster), IN31A1271, **W.F. Denig**, M. Bonadonna, K.D. Scro and J.C. Green.

49th American Institute of Aeronautics and Astronautics (AIAA) Aerospace Sciences Meeting, 04-07 January 2011, Orlando, FL

– Plasma Conditions During the Galaxy 15 Anomaly and the Possibility of ESD from Subsurface Charging (Oral), D.C. Ferguson, **W.F. Denig** and J.V. Rodriguez

National Radio Science Meeting, 05-08 January 2011, Boulder, CO

– New Ionosonde Observations from Puerto Rico, **T.W. Bullett**

– Spatial Effects of HF Multiple Sscatterin in the Ionosphere: Experimental Observations (Oral), N.A. Zabotin and **T.W. Bullett**

– Comparison of Statistical Analysis of Midlatitude Spread F for vfarious Sites Including Wallops Island (Virginia), Boulder (Colorado), Vandenberg AFB (California) and Dyess AFB (Texas) (Oral), **P. Bhaneja** and **T.W. Bullett**

Geospatial World Forum, Hyderabad, India, January 18-21, 2011

– Ghosh, T., C. D. Elvidge, P. C. Sutton, K. E. Baugh, B. T. Tuttle, and D. Ziskin. Using the nighttime satellite imagery to create a global grid of distributed fossil fuel CO2 emissions (poster), **T. Ghosh**, **C.D. Elvidge**, P.C. Sutton, **K.E. Baugh**, B. T. Tuttle, and **D. Ziskin**

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American Meteorological Society (AMS) Annual Meeting, 23-27 Jan 2011, Seattle, WA

– Space Weather from the SEM-N Sensor Suite for Operational Use (Oral), **W. Denig**, **P. Purcell** and C.D. Reimer

South China Sea Fisheries Research Institute, 24 Jan 2011, Guangzhou, China

– A Nineteen Year Record of Lit Fishing Boat Activity (Oral), **C.D. Elvidge**, **K.E. Baugh**, **T. Ghosh**, **S. Anderson** and **D. Ziskin**

Artificial Intelligence in the Earth's Magnetic Field Study, 26-28 January 2011, Uglich, Yaroslavl Region, Russia

– Geomagnetic Data in the World Data Center Archives (Oral, Invited), **J. Mabie**

NRC Heliophysics Decadal Survey "Research to Operations/Operations to Research Town Hall", 7-8 February 2011, Irvine, CA

– On the Utility of Operational Satellite Data to Solar & Space Physics Research (Oral), **W.F. Denig**

The Relationship Between Auroral Phenomenology and Magnetospheric Processes, 27 February - 04 March 2011, Fairbanks, AK

– A Global View of O+ Upward Flows and Outflow Rates Between DMSP and POLAR (Oral), **R. Redmon**, W. Peterson, L. Andersson and **W. Denig**

Boulder Solar Day, 18 March 2011, Boulder, CO

– Space Environmental Conditions at the Time of the Galaxy 15 Anomaly (Oral), **W.F. Denig**, **J.C. Green**, J.V. Rodriguez

31st Asia Pacific Advanced Network Meeting, 21-25 Feb 2011, Hong Kong, China

– Examination of Gas Flares in THEOS Satellite Data (Oral), **C.D. Elvidge**, **K.E. Baugh**, **T. Ghosh**, **S. Anderson** and **D. Ziskin**

– Satellite Observed Nighttime Lights of China (Oral), **C.D. Elvidge**, **K.E. Baugh**, **T. Ghosh**, **S. Anderson** and **D. Ziskin**

National Air and Space Information Center (NASIC), 14 Mar 2011, Wright-Patterson AFB, OH

– Operational Linescan System (OLS) Products Prepared by the NGDC Earth Observations Group (Oral), **K.E. Baugh**

Nightsat Proposal Workshop, 22 Mar 2011, NASA Ames Research Center, Moffett Field, CA

– Nightsat Design Considerations (Oral), **C.D. Elvidge**, **K.E. Baugh**, **T. Ghosh**, **S. Anderson** and **D. Ziskin**

Global Vulcan Project Kickoff Meeting, 30 Mar 2011, Arizona State University, Tempe, AZ

– DMSP Nighttime Lights (Oral), **C.D. Elvidge**, **K.E. Baugh**, **T. Ghosh**, **S. Anderson** and **D. Ziskin**

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